

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### **Listing of Claims**

Claim 1 (Currently Amended): A method of identifying service affecting conditions in the access portion of a network through which a plurality of subscribers are connected to a central point, with a modem at the central point and a modem at the remote point of the connection to each subscriber, the method comprising:

a) obtaining measurements of the electrical characteristics of a subscriber line via a switch connected to an end of the subscriber line opposite the subscriber;

b) obtaining information from a modem connected to the subscriber line between the switch and the subscriber concerning the performance of the subscriber line; and

c) using in combination the measured electrical characteristics and the information from the modem to identify a service affecting condition.

Claim 2 (Original): The method of claim 1 wherein the subscriber line comprises a telephone line carrying DSL service.

Claim 3 (Original): The method of claim 2 wherein the DSL service is ADSL.

Claim 4. (Original): The method of claim 1 wherein the subscriber line comprises a virtual line created by a connection in a local loop of a cable system.

Claim 5 (Previously Presented): The method of claim 1 wherein the modem information is obtained through a standardized interface of the modem.

Claim 6 (Previously Presented): The method of claim 1 wherein the step of using in combination comprises using the measured electrical characteristics to determine a reference and the service affecting conditions are identified by comparing the modem information to the reference.

Claim 7 (Original): The method of claim 6 wherein the electrical measurements indicate the length of the subscriber line.

Claim 8 (Original): The method of claim 7 wherein the modem information provides the bit loading and the reference is selected from a set that includes bit loadings for lines of different lengths.

Claim 9 (Original): The method of claim 1 wherein the service affecting condition is a source of interference.

Claim 10 (Previously Presented): The method of claim 1 wherein the step of using in combination comprises using the measured electrical characteristics to select a reference representing a line without the service affecting condition present.

Claim 11 (Original): The method of claim 1 additionally comprising reporting the results of identifying a service affecting condition.

Claim 12 (Original): The method of claim 11 wherein reporting includes reporting whether a source of interference is present on the subscriber line.

Claim 13 (Original): The method of claim 11 wherein reporting includes reporting on the type of interference source present.

Claim 14 (Previously Presented): The method of claim 11 wherein reporting comprises providing a graph of the difference between a reference set of parameters and the measured parameters on the subscriber line.

Claim 15 (Currently Amended): The method of claim 1 wherein the modem at the central point and the modem ~~and~~ at the remote point communicate information by modulating a plurality of tones and the information concerning the performance of the subscriber line includes a plurality of per-tone pieces of information on the performance of the subscriber line, each piece of information corresponding to one of the tones.

Claim 16 (Previously Presented): The method of claim 15 wherein identifying a service affecting condition includes comparing the per-tone performance information and reference per-tone information.

Claim 17 (Currently Amended): A method of identifying service affecting conditions in the access portion of a network through which a plurality of subscribers are connected to a central point disposed between a switch and a remote point, with a modem at the central point and a modem at the remote point of the connection to each subscriber, with the switch operable for connecting the remote point of the connection to each subscriber to a narrowband network, and with the modem at the central point operable for coupling the remote point of the connection to each subscriber in communication with a broadband network, the method comprising:

- a) obtaining information from a the modem connected to the subscriber line at the central point between the switch and the remote point concerning the data transmission rate as a function of frequency of the subscriber line;
- b) analyzing the data ~~on~~-transmission rate as a function of frequency to determine whether it contains a pattern indicative of a service affecting condition; and
- c) identifying a service affecting condition on the subscriber line when a pattern associated with that service affecting condition is identified.

Claim 18 (Original): The method of claim 17 wherein the pattern for the same service affecting condition is different for subscriber lines of different lengths.

Claim 19 (Original): The method of claim 17 additionally comprising determining the length of the subscriber line and selecting a pattern indicative of a service affecting condition includes selecting a pattern based on the length of the line.

Claim 20 (Original): The method of claim 17 wherein the subscriber line is an ADSL line and the length of the ADSL line is estimated from the upstream attenuation obtained from a modem connected to the subscriber line.

Claim 21 (Original): The method of claim 17 wherein the service affecting condition is interference.

Claim 22 (Currently Amended): The method of claim 21 additionally comprising identifying the source of interference.

Claim 23 (Original): The method of claim 17 wherein the subscriber line is an ADSL line and the service affecting condition is selected from a set of conditions that includes an idle T1 circuit in the same cable bundle.

Claim 24 (Currently Amended): A method of identifying service affecting conditions in the access portion of a network through which a plurality of subscribers are connected to a central point disposed between a switch and a remote point, with a modem at the central point and a modem at the remote point of the connection to each subscriber that communicate by modulating a plurality of tones, with the switch operable for connecting the remote point of the connection to each subscriber to a narrowband network, and with the modem at the central point operable for coupling the remote point of the connection to each subscriber in communication with a broadband network, the method comprising:

- a) obtaining per-tone information from a the modem connected to the subscriber line at the central point between the switch and the remote point indicating performance of the line for each of a plurality of tones;
- b) analyzing the per-tone information as a function of frequency to determine whether it contains a pattern indicative of a service affecting condition; and
- c) identifying a service affecting condition on the subscriber line when a pattern associated with that service affecting condition is identified.

Claim 25 (Original): The method of claim 24 wherein the per-tone information is bit rate per tone.

Claim 26 (Original): The method of claim 24 wherein the per-tone information is signal to noise ratio per tone.

Claim 27 (Original) The method of claim 24 wherein the per-tone information is attenuation per tone.